FluWatch

Public Health Agency of Canada | Agence de la santé publique du Canada

29 June to 12 July, 2014 (weeks 27 & 28)

Overall Summary

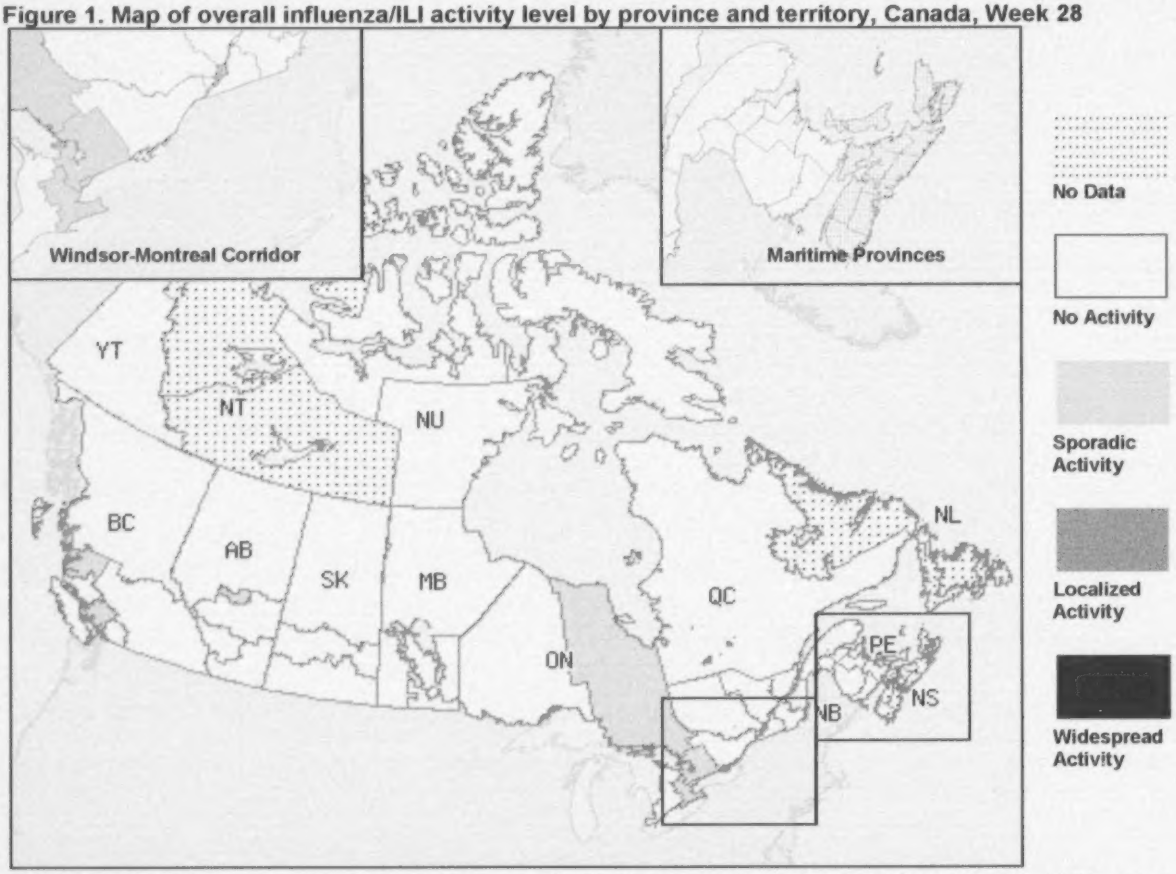
- Influenza activity in Canada is at inter-seasonal levels with most jurisdictions reporting only sporadic detections of influenza and no influenza or ILI outbreaks. Influenza B circulated later into the spring than in previous seasons, but overall activity remained within expected levels.
- As of week 28, 5,414 hospitalizations and 340 deaths have been reported from participating regions, which is slightly more hospitalizations but fewer deaths than were reported last year.

Are you a primary health care practitioner (General Practitioner, Nurse Practitioner or Registered Nurse) interested in becoming a FluWatch sentinel for the 2014-15 influenza season?
Contact us at FluWatch@phac-aspc.gc.ca

Influenza/ILI Activity (geographic spread)

In week 27, one region in Ontario reported localized influenza/ILI activity. In week 28, no region reported localized activity (Figure 1). Seven regions did not report data in week 27 and 16 regions did not report data in week 28.

Figure 1. Map of overall influenza/ILI activity level by province and territory, Canada, Week 28

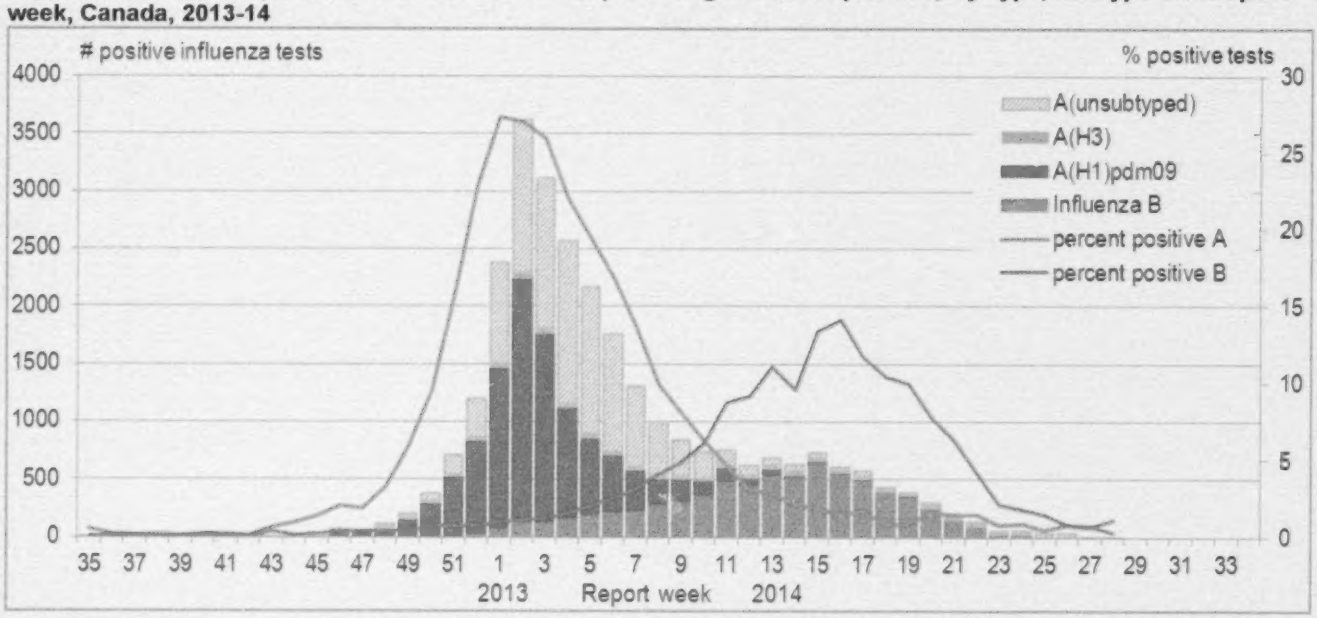


Note: Influenza/ILI activity levels, as represented on this map, are assigned and reported by Provincial and Territorial Ministries of Health, based on laboratory confirmations, sentinel ILI rates and reported outbreaks. Please refer to detailed definitions at the end of the report. Maps from previous weeks, including any retrospective updates, are available on the FluWatch website.

Influenza and Other Respiratory Virus Detections

The number of positive influenza tests declined from 30 in week 26 to 21 in week 27, and remained stable at 20 (1.5% of tests) in week 28 (Figure 2). Influenza B circulated later into the spring than in previous seasons, but detections are now at inter-seasonal levels. Most jurisdictions have reported only sporadic numbers of influenza detections in recent weeks (Table 1). This season, A(H1N1)pdm09 predominantly affected adults 20-64 years of age and children <5 years of age, while influenza B affected greater proportions of adults ≥65 years of age and children 5-19 years of age (Table 2).

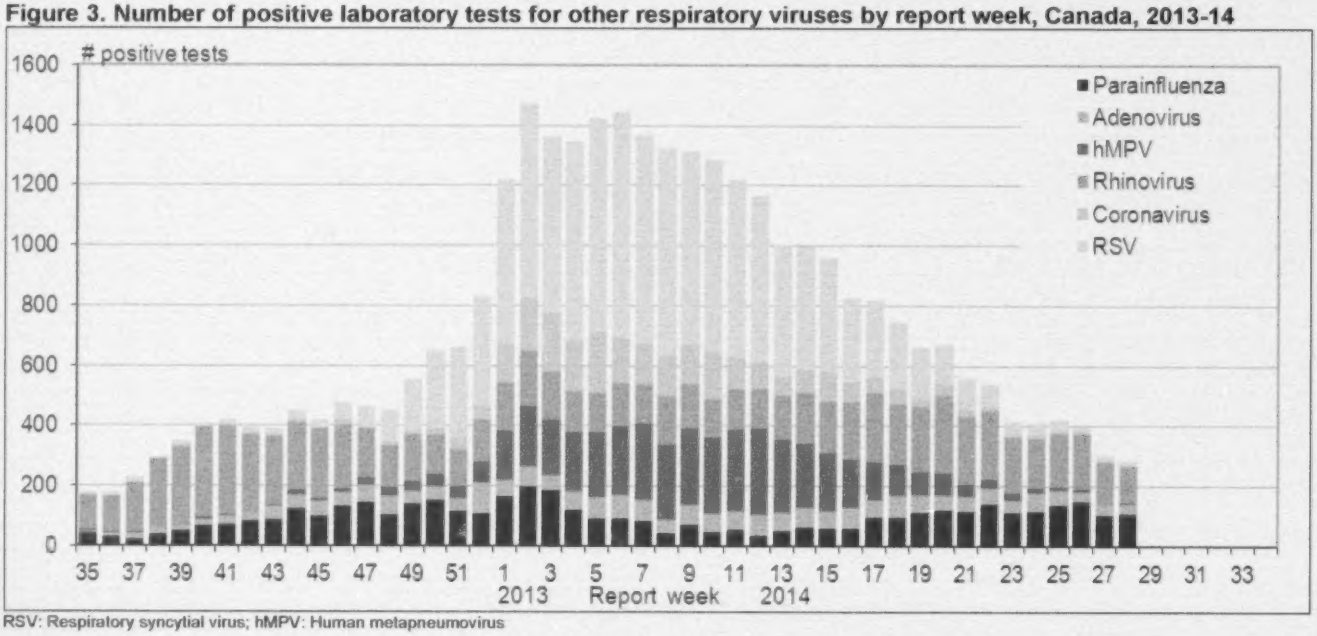
Figure 2. Number of positive influenza tests and percentage of tests positive, by type, subtype and report week, Canada, 2013-14



Detections of RSV, coronavirus, and human metapneumovirus have continued to decline and are near inter-seasonal levels. The number of positive tests for parainfluenza and adenovirus continued to follow a downward trend. Detections of rhinovirus were higher in May and June than during the same period over the past three seasons, however the number of positive tests continues to decrease (Figure 3).

For more details, see the weekly Respiratory Virus Detections in Canada Report.

Figure 3. Number of positive laboratory tests for other respiratory viruses by report week, Canada, 2013-14



RSV: Respiratory syncytial virus; hMPV: Human metapneumovirus

Table 1. Weekly and cumulative numbers of positive influenza specimens by type, subtype and province, Canada, 2013-14

Reporting provinces[1]	Two weeks (June 29 to July 12, 2014)					Cumulative (August 25, 2013 to July 12, 2014)				
	Influenza A				B	Influenza A				B
	A Total	A(H1)pdm09	A(H3)	A(UnS)	B Total	A Total	A(H1)pdm09	A(H3)	A(UnS)	B Total
BC	11	1	9	1	3	1836	1615	78	143	387
AB	4	1	3	0	3	3903	3463	124	316	572
SK	0	0	0	0	1	1384	988	8	388	198
MB	0	0	0	0	0	685	463	7	215	72
ON	8	0	7	1	4	5830	2499	420	2911	3112
QC	1	0	0	1	1	5378	677	6	4695	2746
NB	0	0	0	0	3	1491	370	2	1119	133
NS	0	0	0	0	0	175	134	5	36	52
PE	0	0	0	0	0	119	118	0	1	5
NL	2	0	0	2	0	385	104	0	281	265
Canada	**26**	**2**	**19**	**5**	**15**	**21186**	**10431**	**650**	**10105**	**7542**
Percentage[2]	63.4%	7.7%	73.1%	19.2%	36.6%	73.7%	49.2%	3.1%	47.7%	26.3%

Table 2. Weekly and cumulative numbers of positive influenza specimens by type, subtype and age-group reported through case-based laboratory reporting[3], Canada, 2013-14

Age groups (years)	Two weeks (June 29 to July 12, 2014)					Cumulative (August 25, 2013 to July 12, 2014)						
	Influenza A				B	Influenza A				B	Influenza A and B	
	A Total	A(H1) pdm09	A(H3)	A (UnS)	Total	A Total	A(H1) pdm09	A(H3)	A (UnS)	Total	#	%
<5	1	0	1	0	0	3270	1452	43	1775	558	3828	16.5%
5-19	0	0	0	0	0	1334	707	25	602	828	2162	9.3%
20-44	2	0	0	2	3	5109	2819	53	2237	1030	6139	26.4%
45-64	1	0	0	1	2	4486	2393	68	2025	1521	6007	25.8%
65+	3	0	2	1	1	2657	1002	177	1478	2276	4933	21.2%
Unknown	2	0	2	0	5	152	106	26	20	28	180	0.8%
Total	9	0	5	4	11	17008	8479	392	8137	6241	23249	100.0%
Percentage[2]	45.0%	0.0%	55.6%	44.4%	55.0%	73.2%	49.9%	2.3%	47.8%	26.8%		

[1] Specimens from NT, YT, and NU are sent to reference laboratories in other provinces. Cumulative data includes updates to previous weeks.
[2] Percentage of tests positive for sub-types of influenza A are a percentage of all influenza A detections.
[3] Table 2 includes specimens for which demographic information was reported. These represent a subset of all positive influenza cases reported.
UnS: unsubtyped: The specimen was typed as influenza A, but no result for subtyping was available.

Influenza Strain Characterizations

During the 2013-2014 influenza season, the National Microbiology Laboratory (NML) has antigenically characterized 2,424 influenza viruses [171 A(H3N2), 1,396 A(H1N1)pdm09 and 857 influenza B]. The vast majority (99%) of viruses were similar to the strains recommended by the WHO for the 2013-14 seasonal influenza vaccine. Two A(H1N1)pdm09 viruses showed reduced titres to antiserum against the reference A/California/07/2009 strain, and one A(H3N2) virus showed reduced titres to antiserum against the reference A/Texas/50/2012 strain. Twenty-nine influenza B viruses were similar to the strain recommended by the WHO for the 2011-12 vaccine (Figure 4).

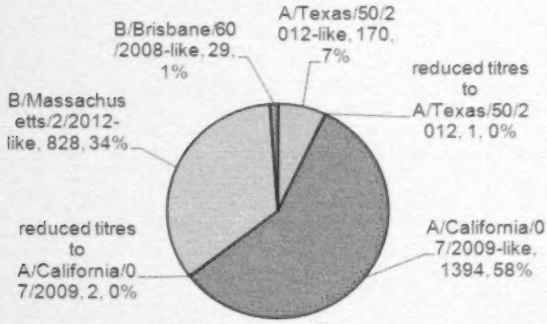

B/Brisbane/60/2008-like, 29, 1%
A/Texas/50/2012-like, 170, 7%
reduced titres to A/Texas/50/2012, 1, 0%
B/Massachusetts/2/2012-like, 828, 34%
reduced titres to A/California/07/2009, 2, 0%
A/California/07/2009-like, 1394, 58%

Figure 4. Influenza strain characterizations, Canada, 2013-14, N = 2,424

The NML receives a proportion of the number of influenza positive specimens from provincial laboratories for strain characterization and antiviral resistance testing. Characterization data reflect the results of haemagglutination inhibition (HAI) testing compared to the reference influenza strains recommended by WHO.

The recommended components for the 2013-2014 northern hemisphere trivalent influenza vaccine include: an A/California/7/2009(H1N1)pdm09-like virus, an A(H3N2) virus antigenically like the cell-propagated prototype virus A/Victoria/361/2011b (e.g. A/Texas/50/2012), and a B/Massachusetts/2/2012-like virus (Yamagata lineage).

Antiviral Resistance

During the 2013-2014 influenza season, NML has tested 2,390 influenza viruses for resistance to oseltamivir and all but five were sensitive. All 2,387 viruses tested for resistance to zanamivir were sensitive. All 1,667 influenza A viruses tested for amantadine resistance were resistant (Table 3).

Table 3. Antiviral resistance by influenza virus type and subtype, Canada, 2013-14

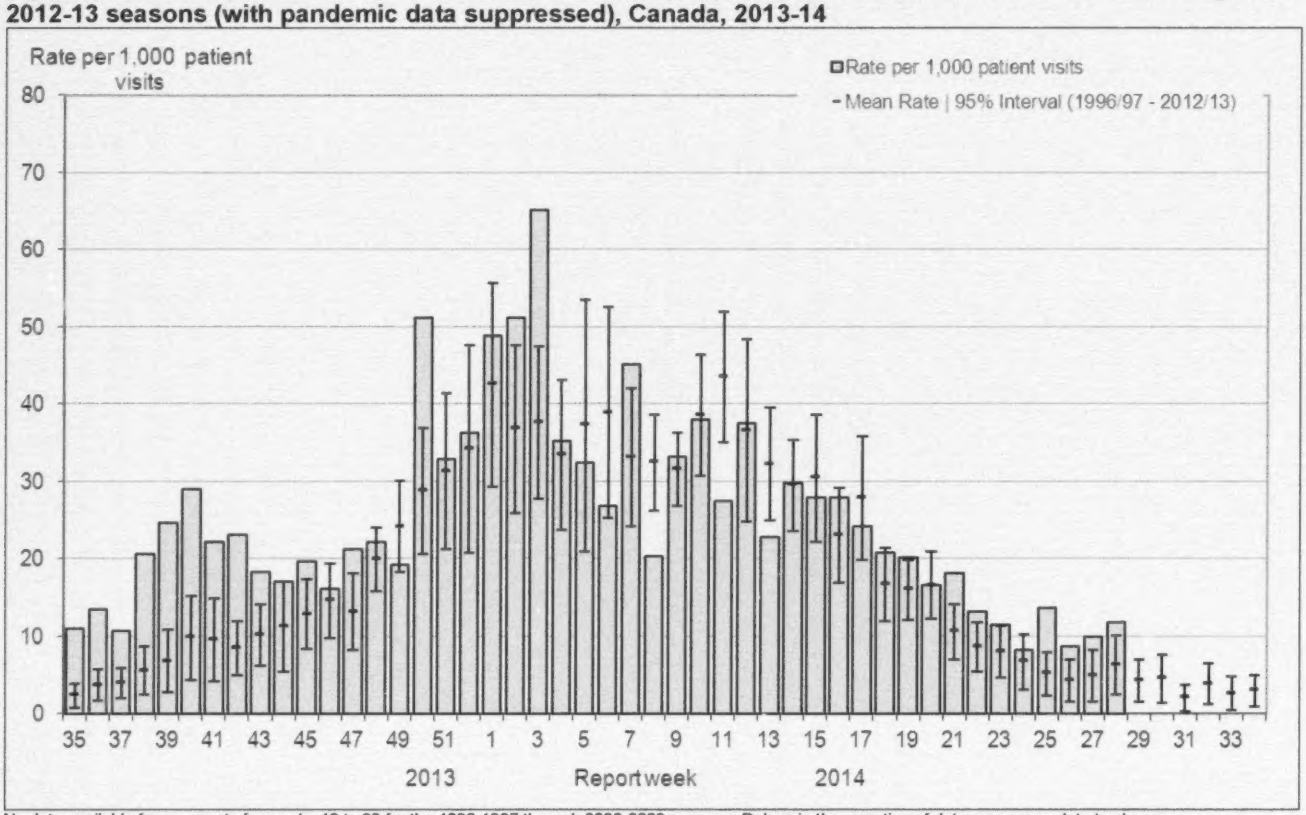
Virus type and subtype	Oseltamivir		Zanamivir		Amantadine	
	# tested	# resistant (%)	# tested	# resistant (%)	# tested	# resistant (%)
A (H3N2)	167	0	165	0	218	218 (100%)
A (H1N1)	1403	5 (0.4%)	1404	0	1449	1449 (100%)
B	820	0	818	0	NA[1]	NA[1]
TOTAL	2390	5 (0.2%)	2387	0	1667	1667 (100%)

[1] NA – not applicable

Influenza-like Illness Consultation Rate

The national influenza-like-illness (ILI) consultation rate increased from 8.7 consultations per 1,000 patient visits in week 26 to 9.9 per 1,000 in week 27 and 11.8 per 1,000 in week 28. The rates for weeks 25 to 28 have been above the expected range for this time of year (Figure 5).

Figure 5. Influenza-like-illness (ILI) consultation rates by report week, compared to the 1996-97 through to 2012-13 seasons (with pandemic data suppressed), Canada, 2013-14

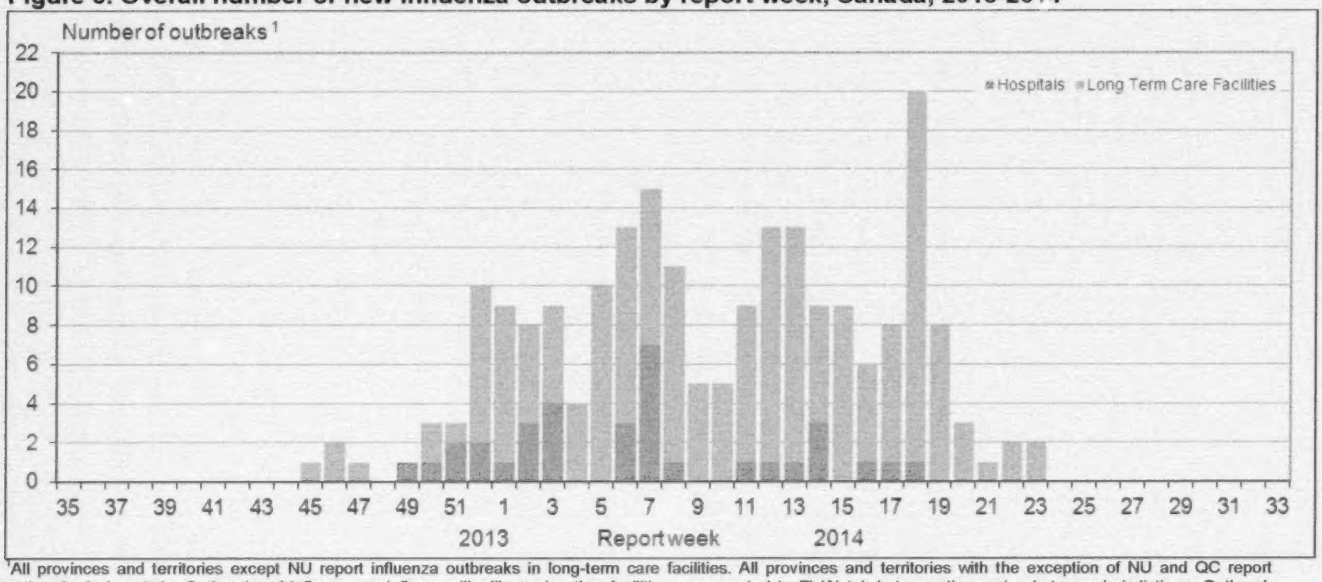


No data available for mean rate for weeks 19 to 39 for the 1996-1997 through 2002-2003 seasons. Delays in the reporting of data may cause data to change retrospectively. The calculation of the average ILI consultation rate over 17 seasons was aligned with influenza activity in each season. In BC, AB, and SK, data is compiled by a provincial sentinel surveillance program for reporting to FluWatch. The number of sentinel physicians in each province or territory is as follows: BC(21), AB(80), SK(11), MB(18), ON(169), QC(14), NB(29), NS(26), PE(4), NL(16), NU(1), NT(14), YT(13). Not all sentinel physicians report every week.

Influenza Outbreak Surveillance

No new influenza outbreaks were reported in weeks 27 and 28 (Figure 6).

Figure 6. Overall number of new influenza outbreaks by report week, Canada, 2013-2014

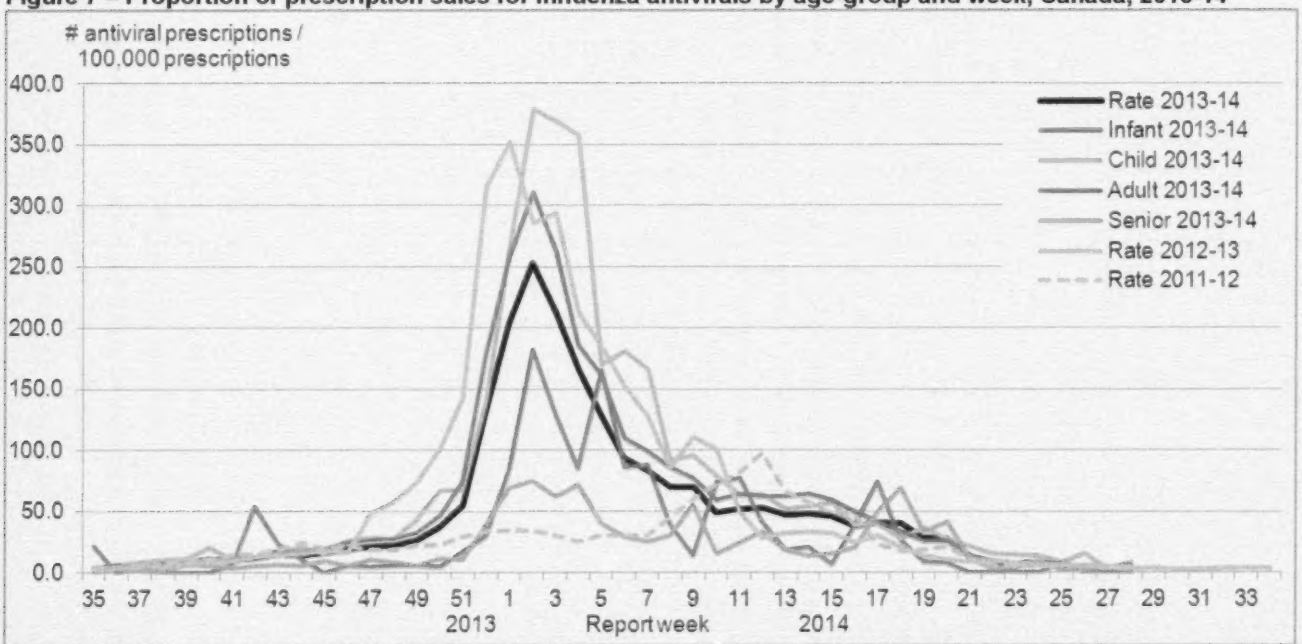


[1]All provinces and territories except NU report influenza outbreaks in long-term care facilities. All provinces and territories with the exception of NU and QC report outbreaks in hospitals. Outbreaks of influenza or influenza-like-illness in other facilities are reported to FluWatch but reporting varies between jurisdictions. Outbreak definitions are included at the end of the report.

Pharmacy Surveillance

In weeks 27 and 28, the proportion of prescriptions for antivirals is approaching inter-seasonal levels. Overall this season, the largest proportion of prescriptions for antivirals has been among children 2-18 years of age and adults 19-64 years of age (Figure 7).

Figure 7 – Proportion of prescription sales for influenza antivirals by age-group and week, Canada, 2013-14



Note: Pharmacy sales data are provided to the Public Health Agency of Canada by Rx Canada Inc. and sourced from major retail drug chains representing over 2,500 stores nationwide (excluding Nunavut) in 85% of Health Regions. Data provided include the number of new antiviral prescriptions (for Tamiflu and Relenza) and the total number of new prescriptions dispensed by Province/Territory and age group. Age-groups: Infant: 0-2y, Child: 2-18y; Adult: 19-64y, Senior: ≥65y

Sentinel Hospital Influenza Surveillance

Paediatric Influenza Hospitalizations and Deaths (IMPACT)

In weeks 27 and 28, no new laboratory-confirmed influenza-associated paediatric (≤16 years of age) hospitalizations, ICU admissions or deaths were reported by the Immunization Monitoring Program Active (IMPACT) network (Figure 8a). No paediatric hospitalizations or ICU admissions have been reported from IMPACT since week 23.

To date this season, a total of 716 influenza-associated paediatric hospitalizations have been reported by the IMPACT network, 78% of which have been influenza A, and almost all of those subtyped (97%) were A(H1N1)pdm09. Children <5 years of age represent 73% of cases to date (Table 4). One hundred and seventeen ICU admissions have been reported, of which 74 (65%) were children <5 years of age (Figure 9a). All but 22 were cases with influenza A, and 98% of those subtyped were A(H1N1)pdm09. Among the 103 ICU cases with available data, 74 (72%) were reported to have underlying medical conditions. One death has been reported this season. A smaller number of paediatric hospital admissions have been reported this year compared to the 2012-13 season.

Note: The number of hospitalizations reported through IMPACT represents a subset of all influenza-associated paediatric hospitalizations in Canada. Delays in the reporting of data may cause data to change retrospectively.

Adult Influenza Hospitalizations and Deaths (PCIRN)

Surveillance of laboratory-confirmed influenza-associated adult (≥16 years of age) hospitalizations by the PHAC/CIHR Influenza Research Network (PCIRN) Serious Outcomes Surveillance (SOS) network has ended for the 2013-14 season (Figure 8b). A summary of PCIRN-SOS data for the 2013-14 season will be included in the FluWatch annual report of influenza surveillance in Canada.

During passive and active surveillance* from August 25th, 2013 to May 31st, 2014, 1,985 influenza-associated hospitalizations were reported by the PCIRN-SOS network, 1,338 (67.4%) with influenza A, predominantly A(H1N1)pdm09 (Table 5). Compared to the 2012-13 season, slightly more cases were reported, although the peak number of cases was smaller. A greater number of cases were reported during March and April compared to last year, with six times more cases of influenza B reported. ICU admission was required for 321 hospitalizations, of which 263 were cases with influenza A (137 A(H1N1)pdm09, ten A(H3N2) and 116 A(unsubtyped)), 57 were cases with influenza B and the influenza type was not reported for one case. A greater proportion of cases were admitted to the ICU this season compared to last year, but the proportion of deaths was similar. Of the ICU admissions with available information, 85.9% (189/220) were reported to have at least one comorbidity, and 68.2% (176/258) reported not having been vaccinated this season. Among the 112 deaths reported this season, all but 28 were cases of influenza A (51 A(H1N1)pdm09, three A(H3N2) and 30 A(unsubtyped)); ten cases 20-44 years of age, 37 cases 45-64 years of age and 65 cases ≥65 years of age (Figure 9b). Among fatal cases with available information, 93.8% (60/64) were reported to have at least one comorbidity, and 48.2% (40/83) reported not having been vaccinated this season.

Note: During the 2013-14 influenza season, PCIRN-SOS conducted passive surveillance from August 25th to November 14th, 2013, and May 16th to 31st. Cases reported during this period were identified by laboratory detection of influenza among patients admitted to participating hospitals. Active surveillance was conducted between November 15th, 2013 and May 15th, 2014 during which time PCIRN site coordinators investigated cases potentially related to influenza. Data from both active and passive surveillance reported during the 2013-14 season are included in this report. The number of hospitalizations reported through PCIRN represents a subset of all influenza-associated adult hospitalizations in Canada. Delays in the reporting of data may cause data to change retrospectively.

Table 4 – Cumulative numbers of paediatric hospitalizations with influenza reported by the IMPACT network, Canada, 2013-14

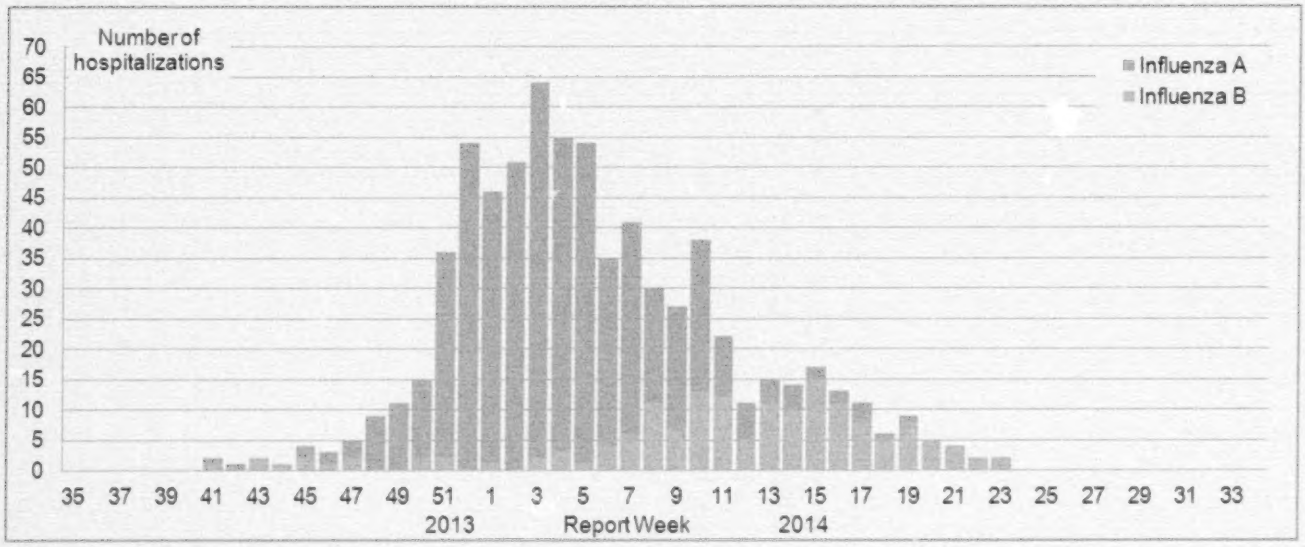
Age groups	Cumulative (25 Aug. 2013 to 12 July 2014)					
	Influenza A				B	Influenza A and B
	A Total	A(H1) pdm09	A(H3)	A (UnS)	Total	# (%)
0-5m	107	39	0	68	12	119 (17%)
6-23m	164	60	1	103	31	195 (27%)
2-4y	162	59	3	100	47	209 (29%)
5-9y	85	34	1	50	56	141 (20%)
10-16y	38	13	1	24	14	52 (7%)
Total	556	205	6	345	160	716
% [1]	77.7%	36.9%	1.1%	62.1%	22.3%	100.0%

Table 5 – Cumulative numbers of adult hospitalizations with influenza reported by the PCIRN-SOS network, Canada, 2013-14

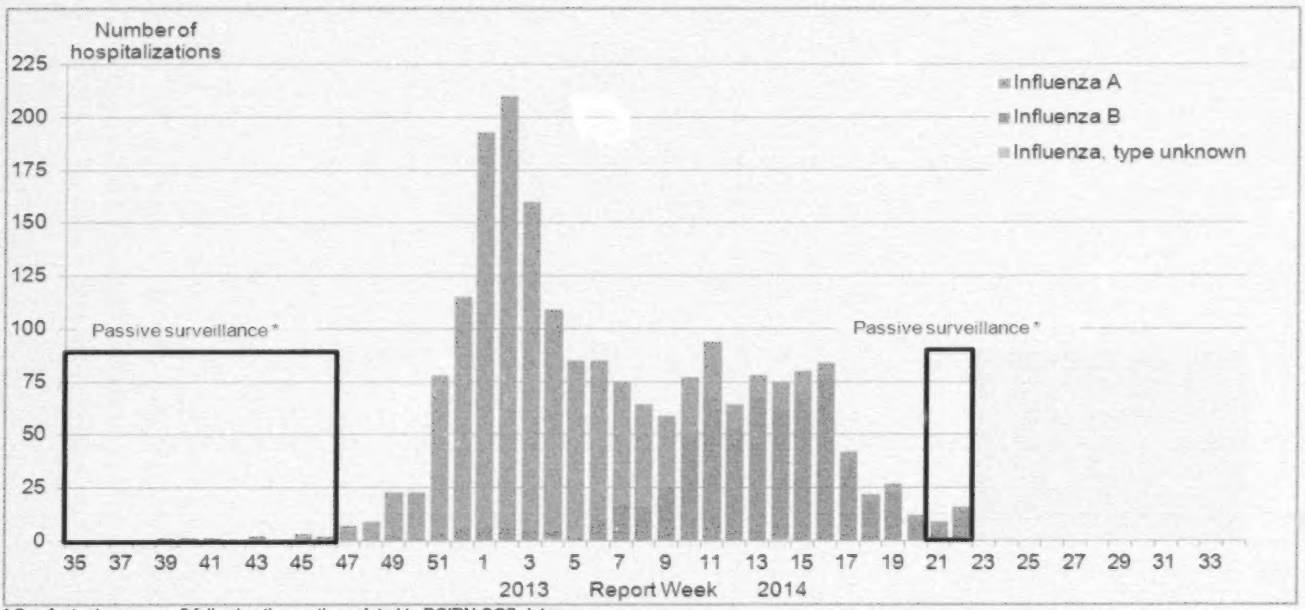
Age groups	Cumulative (25 Aug. 2013 to 31 May 2014)*					
	Influenza A				B	Influenza A and B
	A Total	A(H1) pdm09	A(H3)	A (UnS)	Total	# (%)
16-20	13	5	1	7	2	15 (1%)
20-44	276	142	7	127	47	323 (16%)
45-64	521	245	12	264	135	656 (33%)
65+	525	238	61	226	460	985 (50%)
Total	1 335	630	81	624	644	1 979
%	67%	47%	6%	47%	33%	100%

[1] Percentage of tests positive for sub-types of influenza A are a percentage of all influenza A detections. UnS: unsubtyped: The specimen was typed as influenza A, but no result for subtyping was available. * Two cases for which the influenza type has not yet been reported, and four cases for which the age-group was not reported, are not included in Table 5.

Figure 8 – Number of cases of influenza reported by sentinel hospital networks, by week, Canada, 2013-14
A) Paediatric hospitalizations (≤16 years of age, IMPACT)



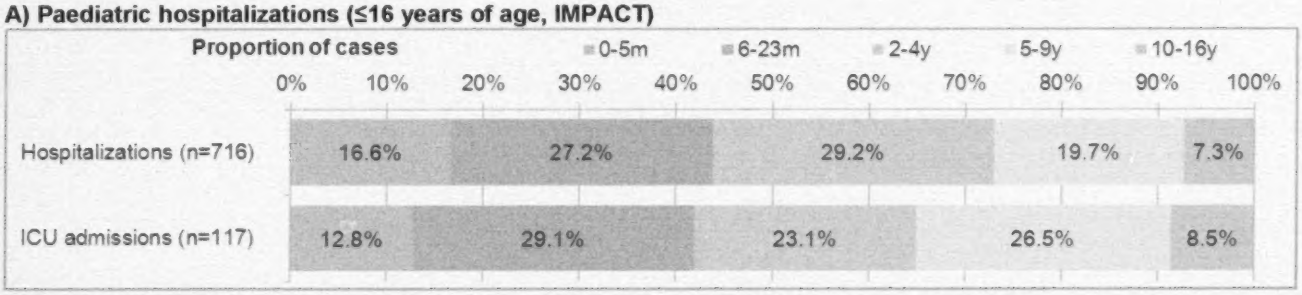
B) Adult hospitalizations (≥16 year of age, PCIRN-SOS)



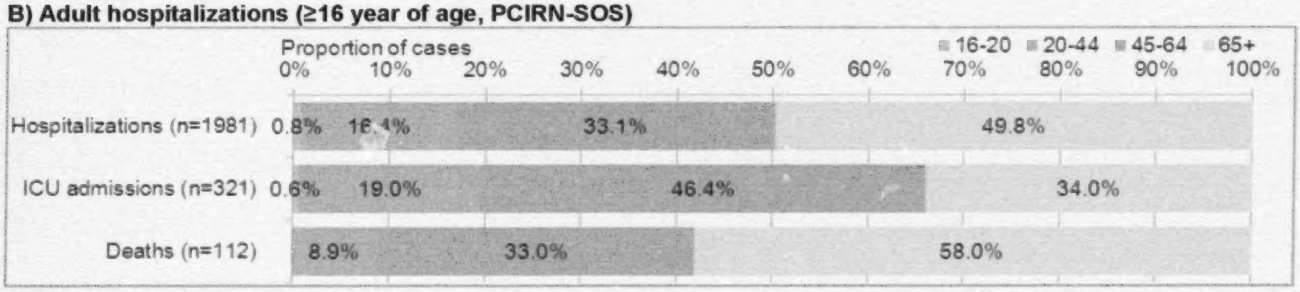
* See footnote on page 6 following the section related to PCIRN-SOS data.

Figure 9 – Percentage of hospitalizations, ICU admissions and deaths with influenza reported by age-group, Canada, 2013-14

A) Paediatric hospitalizations (≤16 years of age, IMPACT)



B) Adult hospitalizations (≥16 year of age, PCIRN-SOS)



Provincial/Territorial Influenza Hospitalizations and Deaths

In week 27 & 28, 48 laboratory-confirmed influenza-associated hospitalizations were reported from participating provinces and territories.* The majority were cases of influenza B (34, 70.8%). One ICU admission was reported in an adult ≥65 years of age. Three deaths were reported in adults ≥65 years of age; two were attributable to influenza A and one to influenza B. The number of new influenza-associated hospitalizations and deaths reported for the current week may include cases from Ontario that occurred in previous weeks, as a result of retrospective updates to the cumulative total.

To date this season, 5,414 influenza-associated hospitalizations have been reported, 68.5% with influenza A. The majority (63.3%) of hospitalizations have been cases 45 years of age of older. A significantly greater proportion of cases of influenza B have been ≥65 years of age compared to cases of A(H1N1)pdm09 this season (Table 6). A total of 383 ICU admissions have been reported this season, of which 64.0% were adults 20-64 years of age. A total of 340 deaths have been reported. The highest proportion of deaths has been among adults ≥65 years of age (56.8%) followed by adults 20-64 years of age (35.3%). In keeping with the late-season circulation, influenza B has been increasingly reported among hospitalized cases of influenza. To date this season, influenza B has been reported in 31.5% of hospitalizations and 35.6% of deaths. It is important to note that the hospitalization or death does not have to be attributable to influenza, a positive laboratory test is sufficient for reporting. Detailed clinical information (e.g. underlying medical conditions) is not known for these cases.

* Note: Influenza-associated hospitalizations are not reported to PHAC by the following Provinces and Territory: BC, NU, QC, and NB. Only hospitalizations that require intensive medical care are reported by Saskatchewan. ICU admissions are not distinguished among hospital admissions reported from Ontario. Data may also include cases reported by the IMPACT and PCIRN networks.

Table 6 – Cumulative number of hospitalizations with influenza reported by the participating provinces and territories, Canada, 2013-14

Age groups (years)	Cumulative (25 Aug. 2013 to 12 July 2014)					
	Influenza A				B	Influenza A and B
	A Total	A(H1) pdm09	A(H3)	A (UnS)	Total	# (%)
0-4	627	289	14	324	145	772 (14%)
5-14	136	65	6	65	123	259 (5%)
15-19	40	23	4	13	9	49 (1%)
20-44	625	426	11	188	107	732 (14%)
45-64	1134	711	34	389	314	1448 (27%)
65+	1010	473	130	407	971	1981 (37%)
Unknown	138	99	3	36	35	173 (3%)
Total	3710	2086	202	1422	1704	5414
Percentage[1]	68.5%	56.2%	5.4%	38.3%	31.5%	100%

[1] Percentage of tests positive for sub-types of influenza A are a percentage of all influenza A detections.
UnS: unsubtyped: The specimen was typed as influenza A, but no result for subtyping was available.

See additional data on Reported Influenza Hospitalizations and Deaths in Canada: 2009-10 to 2013-14 on the Public Health Agency of Canada website.

Emerging Respiratory Pathogens

Human Avian Influenza

Influenza A(H7N9): One new case of human infection with influenza A(H7N9) has been reported by the World Health Organization since the last FluWatch report. Globally to July 17, 2014, the WHO has been informed of a total of 451 laboratory-confirmed human cases with avian influenza A(H7N9) virus, including 171 deaths.

Documents related to the public health risk of influenza A(H7N9), as well as guidance for health professionals and advice for the public is updated regularly on the following websites:
PHAC – Avian influenza A(H7N9)
WHO – Avian Influenza A(H7N9)

Middle East Respiratory Syndrome Coronavirus (MERS-CoV)

Despite recent increases in the number of cases and sporadic reports of cases exported outside the Middle East, the public health risk posed by MERS-CoV in Canada remains low (see the PHAC Assessment of Public Health Risk). Globally, from September 2012 to July 17, 2014, the WHO has been informed of a total of 836 laboratory-confirmed cases of infection with MERS-CoV, including 289 deaths. All cases have either occurred in the Middle East or have had direct links to a primary case infected in the Middle East.

Documents related to the public health risk of MERS-CoV, as well as guidance for health professionals and advice for the public is updated regularly on the following websites:
PHAC – Middle East respiratory syndrome coronavirus (MERS-CoV)
WHO – Coronavirus infections

International Influenza Reports

World Health Organization influenza update

World Health Organization FluNet

WHO Influenza at the human-animal interface

Centers for Disease Control and Prevention seasonal influenza report

EuroFlu weekly electronic bulletin

European Centre for Disease Prevention and Control - epidemiological data

South Africa Influenza surveillance report

New Zealand Public Health Surveillance

Australia Influenza Report

Pan-American Health Organization Influenza Situation Report

FluWatch Definitions for the 2013-2014 Season

Abbreviations: Newfoundland/Labrador (NL), Prince Edward Island (PE), New Brunswick (NB), Nova Scotia (NS), Quebec (QC), Ontario (ON), Manitoba (MB), Saskatchewan (SK), Alberta (AB), British Columbia (BC), Yukon (YT), Northwest Territories (NT), Nunavut (NU).

Influenza-like-illness (ILI): Acute onset of respiratory illness with fever and cough and with one or more of the following - sore throat, arthralgia, myalgia, or prostration which is likely due to influenza. In children under 5, gastrointestinal symptoms may also be present. In patients under 5 or 65 and older, fever may not be prominent.

ILI/Influenza outbreaks

- **Schools:** Greater than 10% absenteeism (or absenteeism that is higher (e.g. >5-10%) than expected level as determined by school or public health authority) which is likely due to ILI. Note: it is recommended that ILI school outbreaks be laboratory confirmed at the beginning of influenza season as it may be the first indication of community transmission in an area.
- **Hospitals and residential institutions:** two or more cases of ILI within a seven-day period, including at least one laboratory confirmed case. Institutional outbreaks should be reported within 24 hours of identification. Residential institutions include but not limited to long-term care facilities (LTCF) and prisons.
- **Workplace:** Greater than 10% absenteeism on any day which is most likely due to ILI.
- **Other settings:** two or more cases of ILI within a seven-day period, including at least one laboratory confirmed case; i.e. closed communities.

Note that reporting of outbreaks of influenza/ILI from different types of facilities differs between jurisdictions.

Influenza/ILI Activity Levels

1 = No activity: no laboratory-confirmed influenza detections in the reporting week, however, sporadically occurring ILI may be reported

2 = Sporadic: sporadically occurring ILI and lab confirmed influenza detection(s) with **no outbreaks** detected within the influenza surveillance region†

3 = Localized: (1) evidence of increased ILI* ;
(2) lab confirmed influenza detection(s);
(3) **outbreaks** in schools, hospitals, residential institutions and/or other types of facilities occurring in **less than 50% of the influenza surveillance region**†

4 = Widespread: (1) evidence of increased ILI*;
(2) lab confirmed influenza detection(s);
(3) **outbreaks** in schools, hospitals, residential institutions and/or other types of facilities occurring **in greater than or equal to 50% of the influenza surveillance region**†

Note: ILI data may be reported through sentinel physicians, emergency room visits or health line telephone calls.

* More than just sporadic as determined by the provincial/territorial epidemiologist.

† Influenza surveillance regions within the province or territory as defined by the provincial/territorial epidemiologist.

We would like to thank all the Fluwatch surveillance partners who are participating in this year's influenza surveillance program.

This report is available on the Public Health Agency website at the following address: http://www.phac-aspc.gc.ca/fluwatch/index.html.

Ce rapport est disponible dans les deux langues officielles.